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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,504	07/27/2006	Yuichi Sakanishi	2224-0262PUS1	2660

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BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER
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JONES JR., ROBERT STOCKTON

ART UNIT	PAPER NUMBER
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4151

NOTIFICATION DATE	DELIVERY MODE
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06/10/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/587,504	<b>Applicant(s)</b> SAKANISHI, YUICHI	
	<b>Examiner</b> ROBERT JONES JR.	<b>Art Unit</b> 4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. ____.                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>07/27/06</u> .  | 6) <input type="checkbox"/> Other: ____.                          |

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 contains the phrase “a substituent exhibiting an electronic effect of lowering reaction rate”, used to describe the polycarbodiimide (C) (Claim 1, lines 10-11). However, it is unclear which reaction the claim is directed to. Claim 1 itself additionally requires a polyester elastomer (A) and an epoxy compound (B) (Claim 1, line 4) which may react with said polycarbodiimide, while the specification addresses a reaction between the carbodiimido group of said polycarbodiimide (C) and water (p. 10, lines 10-11). The electronic effect of various substituents on the rate of a reaction will vary depending on the compound reacting with said polycarbodiimide. Therefore, the claim is indefinite.

Claims 2-4 depend from Claim 1, and thus stand similarly rejected.

### ***Claim Rejections - 35 USC § 102***

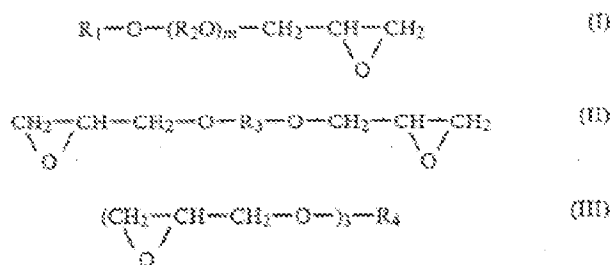
The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by

Kobayashi et al. (US Pat. No. 4,500,686).

Regarding Claim 1, Kobayashi teaches a polyester type block copolymer composition having a rubber-like elasticity (a polyester elastomer) with at least one epoxy compound (Abstract). Suitable epoxy compounds conform to the formulae seen below (col. 3, lines 2-14):



The epoxy compounds illustrated above possess at least one epoxy group per molecule. Said epoxy compound is preferably present in an amount from 0.3 to 10% by weight, based on the weight of the polyester copolymer (col. 3, lines 32-36). A polycarbodiimide may also be incorporated into the composition (col. 4, lines 29-31). Said polycarbodiimide is of the formula  $X_1-R_1-[N=C=N-R_2']_n-N=C=N-R_3'-X_2$ , wherein  $R_1'$ ,  $R_2'$ , and  $R_3'$  may be a divalent aliphatic hydrocarbon group having 1 to 12 carbon atoms, or a divalent aromatic hydrocarbon group (col. 4, lines 31-40). Said aliphatic hydrocarbon groups satisfy requirement (i) of Claim 1, while said aromatic

Art Unit: 4151

groups satisfy requirement (ii). Said polycarbodiimide is preferably used in an amount of about 2 to 8% by weight, based on the weight of the polyester block copolymer.

Regarding Claims 2 and 3, said polyester block copolymer comprises a crystalline aromatic polyester and a lactone (col. 2, lines 8-11). Said crystalline aromatic polyester represents the hard segment and said lactone represents the soft segment of said copolymer. The lactone is most preferably  $\epsilon$ -caprolactone (col. 2, line 45).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi as applied to Claim 1 above, further in view of Imashiro et al. (US Pat. No. 5,912,290).

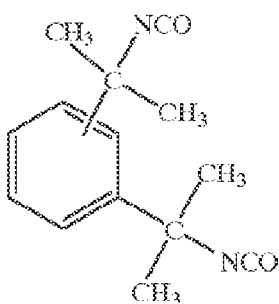
Art Unit: 4151

Regarding Claim 4, Kobayashi remains as applied to Claim 1 above. Kobayashi enables the use of polycarbodiimides, but does not disclose the specific structure of said polycarbodiimides, and therefore does not teach that said composition comprises a polycarbodiimide which conforms to the structure of Claim 4.

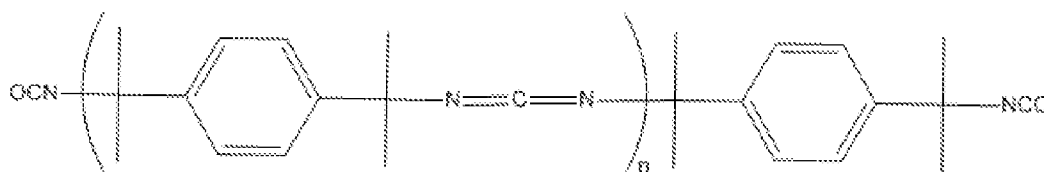
In the field of ester group-containing resins, Imashiro teaches a hydrolysis stabilizer comprising a carbodiimide derived from tetramethylxylylene diisocyanate (TMXDI) (Abstract). Imashiro's carbodiimide has proven success when used to modify polyester resins (col. 7, Example 2; col. 8, Example 3). Said hydrolysis stabilizer is represented by the following formula:



wherein R1 is a TMXDI residue obtained by removing NCO groups from TMXDI, and n is an integer of 1 or more (col. 4, lines 33-43). TMXDI is illustrated below:



When R1 is a TMXDI residue, Imashiro's carbodiimide has the formula seen here:



Art Unit: 4151

The carbodiimide pictured above conforms to the structure of Claim 4, where R is an alkyl group having 1 carbon atom (i.e. methyl). Said carbodiimide has excellent compatibility with ester resins and exhibits an anti-hydrolysis effect when added to ester-type resins (col. 9, lines 25-31).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Kobayashi to include Imashiro's carbodiimide for the benefit of hydrolysis resistance. Additionally, Kobayashi teaches the use of similar compounds in said composition, and Imashiro's carbodiimide has been used successfully to modify polyester resins.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ROBERT JONES JR. whose telephone number is (571)270-7733. The examiner can normally be reached on 5/4/9.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on 571-272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

Art Unit: 4151

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RSJ

*/Angela Ortiz/*

***Supervisory Patent Examiner, Art Unit 4151***